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REVIEW

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CURRENT LABOR MARKET CONDITIONS in ENGINEERING, SCIENTIFIC, AND TECHNICAL OCCUPATIONS



January 1961

U. S. DEPARTMENT OF LABOR

Arthur J. Goldberg, Secretary

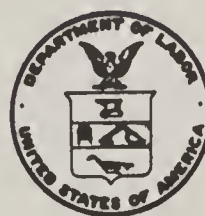
BUREAU OF EMPLOYMENT SECURITY

Robert C. Goodwin, Director

Washington 25, D. C.

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This survey, formerly prepared bimonthly, is now issued semiannually. It is based on field reports on current conditions in 30 major labor market areas prepared by State employment security agencies affiliated with the Bureau of Employment Security, statistics on job openings for selected engineering, scientific and technical occupations placed in interarea clearance by public employment offices throughout the country, and information obtained from various government agencies, professional societies, and other sources. This study was prepared by Benjamin Goldstein.

Office of Program Review and Analysis

Louis Levine, Deputy Director, Bureau of Employment Security

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contents

Trend Indicators	1
Recent Developments in Interarea Recruitment	3
Current Trends in the Labor Demand-Supply Situation . . .	6
Summary	6
Engineers	7
Area Trends	9
Chemists.	18
Other Natural Scientists. . . .	18
Draftsmen	19
Laboratory Technicians.	19
Digest of Related Information	21
Appendix	
Technical Notes	30
List of 30 Major Labor Market Areas.	31
Tables.	32

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Trend Indicators

SHORT-TERM OUTLOOK FOR ENGINEERS AND SCIENTISTS: Several of the Nation's major employment centers predict that demands for workers in engineering, scientific and other selected occupations will show little change or continue to ease during early 1961. From New Orleans: "There are no indications that local demands for workers in these selected occupations will improve in the next two to four months since firms employing such workers do not anticipate an early pickup in activities or production schedules." . . . And in Denver: "The outlook for the next two months for these selected occupations appears that the demand will not be as active as in the past and the supply has possibilities of increasing." . . . While Milwaukee, where continuing declines in hard goods production and employment have reduced needs for workers in the selected occupations, observes that "further weakening of the demand for workers in the engineering fields is expected during the next four months. Several large durable goods firms that employ substantial numbers of engineers have curtailed or cancelled first-semester college recruitment programs." . . . However, some modification of this trend is expected because of an anticipated rise in defense expenditures. The San Francisco-Oakland area, on the other hand, comments that the outlook is more favorable than earlier estimates indicated though the market will not be as tight as it was in January 1960. Employers who were pessimistic two months ago are anticipating some hiring. Much of the increase will be directly or indirectly related to Federal spending.

GRADUATE ENGINEERS AND SCIENTISTS CONTINUE TO ENCOUNTER PLACEMENT DIFFICULTIES IN VARIOUS AREAS: Chicago indicates that opportunities for new graduates in the present market are limited. . . . Portland observes that "placement opportunities for new graduates are at a very low ebb with only a trickle of jobs coming along." . . . New York City comments: "Recent graduates in physics, mathematics and engineering willing to enter research and development work find it difficult to locate jobs in this area."

FURTHER TIGHTENING OF EMPLOYER HIRING SPECIFICATIONS REPORTED: Chicago notes that "the strict hiring specifications which have been in effect for some time are becoming even more stringent as time goes by. This is especially true of age and educational requirements. . . . And in Milwaukee, "hiring specifications have become more rigid with the loosening of the labor market. The majority of current engineering and drafting vacancies require workers with two to five or more years of experience--and frequently in a specific kind of work." . . . Seattle, where the inability of job applicants to meet employers' educational or experience specifications, presents significant placement problems, comments: "The whole situation was further complicated by the addition to available openings of jobs requiring more rigid experience and specialized training or experience than before."

PLANNING FOR PERSONNEL GROWTH AND EXPANSION OF PHYSICAL FACILITIES IN: Earth and Other Sciences: Massachusetts Institute of Technology has broken ground for a twenty-story structure to be devoted to the earth sciences. Due to be finished in 1962, this \$6,000,000 building will include 12 major laboratories for research in oceanography, meteorology and geosciences, a large library, a lecture auditorium and offices. The building is the first of five new major research centers to be constructed on MIT's campus in its \$50,000,000 expansion program. Boston University likewise has broken ground for a new \$4,400,000 University Union Building in which the institution's science facilities will eventually be housed.

Medical Research and Care: In the Boston area, physical plants of hospitals are being enlarged. The Massachusetts General Hospital is seeking to raise \$20,000,000, primarily for new facilities; the Peter Bent Brigham Hospital is raising \$7,000,000; and Beth Israel has announced a \$7,500,000 program. Harvard Medical School will spend (in addition to the Countway Library of Medicine) an additional \$15,000,000 to \$20,000,000 over the next few years for further construction. In Dallas, a new laboratory for heart research will be constructed at the Southwestern Medical School. A doubling of the staff is anticipated; this will boost future demands for chemists, natural scientists, and laboratory technicians.

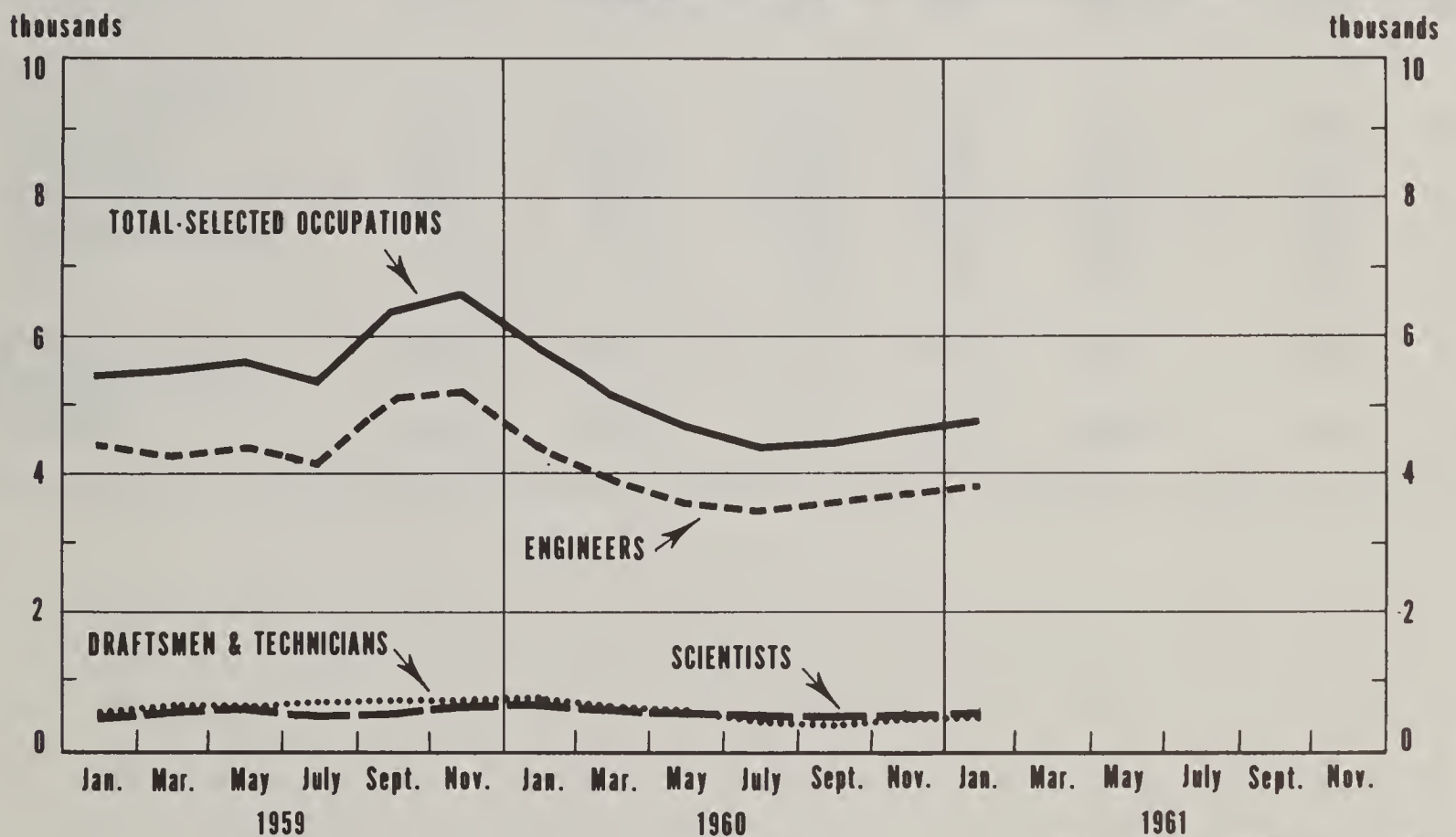
TACKLING THE SHORTAGE OF MEDICAL TECHNOLOGISTS: Northeastern University has instituted a unique degree program to train individuals, mostly women, for work in this shortage occupation. This program, the first of its type in the nation, will give students almost two full years of training in medical technology at the New England Deaconess and New England Baptist Hospitals, qualifying them at the same time for a bachelor's degree. This program, to be conducted under Northeastern's cooperative plan, will allow students to meet the higher educational requirements which are being established by the Registry of Medical Technologists as of January 1962. These new requirements will mean that applicants seeking to take examinations as hospital medical technologists must have completed three years of college studies in specified courses, with 12 consecutive months at an approved school of medical technology. Students in Northeastern's new program will be qualified to take this new and more rigid examination and will have an edge in obtaining the master's degree needed for medical technology teaching positions.

recent developments in

INTERAREA RECRUITMENT

Clearance job openings in selected engineering, scientific, and technical occupations edged upward between November 1960 and January 1961. Increased manpower needs were reported over this period for engineers, chemists, physicists and draftsmen; reduced demands, however, were noted for laboratory technicians and mathematicians. For the selected occupations, clearance openings numbered about 4,800 in January, some 200, or 4.2 percent, above the November level. Total needs, however, were 17.5 percent below the 5,800 openings reported in January 1960.

TREND IN JOB OPENINGS PLACED IN INTERAREA CLEARANCE BY PUBLIC EMPLOYMENT OFFICES
BIMONTHLY, 1959-1961



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF EMPLOYMENT SECURITY
OFFICE OF PROGRAM REVIEW AND ANALYSIS
Washington 25, D. C.

Job vacancies for engineers, accounting for about four-fifths of all clearance openings in selected occupations, rose by almost 140 from November to January. Gains were reported in the civil, industrial, mechanical, and aeronautical categories, largely to meet needs in the aerospace field.

The important electrical engineering group, however, reported a net decline of over 100 openings. Reduced openings in Ohio, Washington, New York, and Alabama more than counterbalanced added needs in California in industries producing electric measuring instruments, test equipment and radio and television transmitting, signalling, and detection equipment and apparatus and in Florida's ordnance activities.

In the natural science field, job opportunities for chemists and physicists picked up noticeably while those for mathematicians declined.

In the technical classifications, openings for laboratory technicians dropped by one-fifth to about 150 in January but needs for draftsmen rose by a similar percentage to a total of 300.

Number of Nonagricultural Job Openings in Selected Occupations
in Interarea Clearance at Public Employment Offices, U. S. Total,
January 1961 and November 1960, and January 1960

Selected Occupations	Job Openings			Change to Jan. 1961 from:			
	Jan. 1961	Nov. 1960	Jan. 1960	Nov. 1960		Jan. 1960	
				Num- ber	Per- cent	Num- ber	Per- cent
All Selected Occupations	4,799	4,605	5,817	+194	+4.2	-1,018	-17.5
Engineers, total	3,835	3,697	4,389	+138	+3.7	-554	-12.6
Chemical	152	155	98	-3	-1.9	+54	+55.1
Civil	385	327	218	+58	+17.7	+167	+76.6
Electrical	1,729	1,842	2,532	-113	-6.1	-803	-31.7
Industrial	229	162	225	+67	+41.4	+4	+1.8
Mechanical	891	820	1,055	+71	+8.7	-164	-15.6
Aeronautical	416	353	216	+63	+17.8	+200	+92.6
Natural Science Occupations	516	471	648	+45	+9.6	-132	-20.4
Chemists	177	146	180	+31	+21.2	-3	-1.7
Physicists	200	176	234	+24	+13.6	-34	-14.5
Mathematicians	99	112	159	-13	-11.6	-60	-37.7
Other	40	37	75	+3	+8.1	-35	-46.7
Draftsmen	296	248	605	+48	+19.4	-309	-51.1
Laboratory tech- nicians	152	189	175	-37	-19.6	-23	-13.2

CURRENT TRENDS IN

LABOR DEMAND -- SUPPLY SITUATION

SUMMARY - 30 MAJOR AREAS

The job market for engineers, scientists, and technical personnel appeared somewhat weaker as the year drew to a close than during the mid-1960 period. Unfilled job openings in these selected occupations in the 30 major reporting areas declined from about 4,800 to almost 4,550 between May and November 1960, a drop of some 5 percent. Reduced needs for draftsmen and laboratory technicians accounted for most of the downturn. Demand in the key engineering group, where about two-thirds of all job openings are reported, remained relatively unchanged, however. Job applications in the selected occupations rose about 400 (2.5 percent) to a total of slightly over 16,000 during the half year period, as a marked increase in registrations was reported among laboratory technicians. Engineering job applications also increased somewhat. Some decline was noted, however, in the number of chemists, other natural scientists, and draftsmen registered for work.

Weaknesses in various durable goods activities, cutbacks in highway and other construction, and layoffs in architectural and engineering service firms contributed to the rise in the total of engineering registrants between May and November. Despite these developments, increased job openings were reported in certain engineering categories, including the civil, mechanical and aeronautical groups. Sharply increased orders in these specialties followed a reassessment of its manpower needs by Boeing in Seattle. In the Los Angeles-Long Beach area, intensive recruitment in various engineering groups was undertaken because of rising defense expenditures. These increases in West Coast centers helped maintain the overall total of engineering job openings at close to 3,100 in November. The largest demand for engineers continued to be reported in the electrical category.

Significantly lower needs were noted for draftsmen in November. While most areas indicated an increased supply of job seekers in this classification, total registrations did not rise, however, as sizable numbers of job seekers in Detroit failed to keep their applications active.

The employment situation for chemists and other natural scientists appeared more favorable in the past half year with appreciable declines in job registrations noted in these groups. Unfilled openings for chemists were relatively unchanged from the May level but reported needs for natural scientists have increased appreciably, aided by increased defense spending. Among laboratory technicians, applications have risen markedly in the same period, as a result of the entry of new school graduates into the labor market; nevertheless, registered medical technicians continued in short supply.

ENGINEERS

The engineering supply, as indicated by the number of active job applications in the 30 major labor market areas, increased by about 100, or 1.7 percent, between May and November to a total of nearly 6,100. The rise was numerically greatest in the civil, industrial, and mechanical specialties. Continued hard goods curtailments, construction and other layoffs added to the supply of engineering job registrants in over two-thirds of the reporting industry centers.

Number of Engineering Job Applicants
November and May 1960 and November 1959

Engineering Specialty	Active Applications			Change to Nov. 1960 from:			
	Nov. 1960		Nov. 1959	May 1960		Nov. 1959	
	Nov. 1960	May 1960		Num- ber	Per- cent	Num- ber	Per- cent
Engineers, total	6,061	5,958	4,117	+103	+1.7	+1,944	+47.2
Metallurgical	88	86	59	+2	+2.3	+29	+49.2
Chemical	313	292	294	+21	+7.2	+19	+6.5
Civil	1,028	920	856	+108	+11.7	+172	+20.1
Electrical	915	951	604	-36	-3.8	+311	+51.5
Industrial	1,147	1,082	719	+65	+6.0	+428	+59.5
Mechanical	2,344	2,289	1,408	+55	+2.4	+936	+66.5
Aeronautical	166	275	133	-109	-39.6	+33	+24.8
Mining	60	63	44	-3	-4.8	+16	+36.4

Chicago recorded the largest half-year rise in job applications, with 130 more engineering job seekers noted in November than in May. Layoffs have been reported in the important electrical machinery industry as well as in architectural and tool design firms. Area establishments have also been reducing employment by not replacing individuals who quit or retire.

Three other areas--New York, Milwaukee, and Washington, D. C.--had from 50 to 100 more engineering applicants in November than in May. In contrast to developments in these areas, Los Angeles-Long Beach had almost 400 fewer engineering job seekers during this period. The reduction was attributable to a rise in defense spending as well as some labor force withdrawals. Dallas, the only other center with a decline of more than 50 applicants over the past half year, reported the reduction was due primarily to recruitment by out-of-area establishments.

While total unfilled openings for engineers remained relatively unchanged, demands in certain specialties--including the civil, mechanical, and aeronautical groups--rose significantly. This increase, confined largely to the Pacific Coast, stemmed principally from Boeing's reevaluation of its labor requirements in the Seattle area. Counterbalancing declines, however, were reported in a number of other categories, notably for electrical and industrial engineers. Significantly reduced needs for electrical engineers in the Milwaukee area were attributable to cancelled orders in the transportation equipment and machinery industries. In the Denver area, cutbacks were related to a levelling off in employment in aircraft parts plants. Appreciably fewer openings for industrial engineers were reported in the Boston, Milwaukee, St. Louis, Denver and Seattle areas. To some extent, sizable reductions in Boston appeared to be related to the location of satellite plants outside the immediate labor market area.

While demands for electrical engineers have been reduced, this category still accounts for the largest proportion of unfilled needs. About 40 percent of the engineering openings were in this group in November, as compared with 50 percent in May. Many areas continue to report urgent demands for electronic engineers although indicating employer requirements relating to specialized experience have tightened.

Area Trends

Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:		Comments
	Nov. 1960	May 1960	Nov. 1960	May 1960	

Summary, 30 Areas	6,061	5,958	4,117	3,065	3,075	4,103	There was a further easing in the job market for engineers during the past six months. Among the contributing factors noted in reporting areas were cutbacks in various durable goods activities, the slack in highway and other construction, and personnel reductions made by architectural and engineering service firms. Over two-thirds of the reporting areas had more job seekers registered in the engineering classifications in November than in May. The total number of engineering applicants increased only slightly, however, aided by (1) labor force withdrawals of college students who had entered the job market in May seeking summer employment; (2) administrative factors, such as the expiration of 30 day validity periods for keeping local office job applications current; and (3) rising defense expenditures for aerospace programs. The latter development resulted in substantial recruitment of mechanical, aeronautical and electrical engineers in the Los Angeles-Long Beach area.
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Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:		Comments
	Nov. 1960	May 1960	Nov. 1960	May 1960	

New England Region:
Boston, Mass.

268	252	218	33	75	261	Listed job openings for engineers in November were less than half the May total. The more precipitous over-the-year drop was largely in the electrical-electronic engineering group. Part of this decline has been occasioned by the movement of new satellite plants to areas outside the geographic limits of the Boston labor market.
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Providence, R. I.

41	57	47	11	3	7	Reduction in number of applications follows indications that many registrants canvassed regarding interest in available openings have found satisfactory employment. Industrial and mechanical engineers make up bulk of current supply of applicants.
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Middle Atlantic Region
Buffalo, N. Y.

170	129	112	67	48	63	Active applications have increased in most engineering classifications since May. Unfilled openings also rose, particularly for mechanical and electrical engineers.
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New York, N. Y.

663	603	651	88	131	105	Weaknesses in several components of the engineering market--a slowdown in plant expansion; slack in highway engineering; decline in certain industrial activities because of a lack of defense contracts--have resulted in drop in unfilled openings and a rise in job applications.
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Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:		Comments
	Nov. 1960	May 1960	Nov. 1960	May 1960	

Middle Atlantic Region:
Cont.

Newark, N. J. 1/	225	141	164	80	97	124	Marked fluctuation reported in number of applicants registered during the six months period; aggregate supply reached a peak of 300 in July and then dropped. The decline was almost entirely in the younger age group and would indicate that part of the loss was due to students returning to college.
Paterson, N. J.	89	83	87	27	25	53	Aggregate supply relatively stable over the past six months as well as over the year. Unfilled openings, while relatively unchanged from May, down sharply from a year ago. Most significant demand continues to be reported for electrical engineers experienced on transmission and receiver equipment.
Philadelphia, Pa.	324	311	336	8	25	17	Increase in registrants in the mechanical and chemical classifications offsets declines from those in civil and electrical groups. Electronic engineers continue to be in demand.

1/ Newark area redefined. Active applications for May 1960 and November 1959 and unfilled openings for November 1959 are estimated.

Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:			Comments
	Nov. 1960	May 1960	Nov. 1960	May 1960	Nov. 1959	

Middle Atlantic Region:
Cont.

Pittsburgh, Pa.	169	164	190	50	39	28	No sizable change reported in total number of applicants but some variations evident in specific classifications. Registrations of industrial and metallurgical engineers rose from May to November while those of electrical and mechanical engineers declined. The pickup in unfilled openings since May stems from demands for civil and electrical engineers. Reflecting recessionary developments in the area, no orders for engineers were received from employers in November.
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East N. Central Region:
Cincinnati, Ohio

Cleveland, Ohio	170	129	109	53	42	70	Increased applicants recorded principally in the industrial and mechanical classifications. Unfilled openings above May level, although well below year-ago total. Increased employer selectivity in hiring new workers reported.
	68	55	38	18	23	40	Easing job market reflected in increased number of applicants and fewer openings.

Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:		Comments		
	Nov. 1960	May 1960	Nov. 1960	May 1960			
Nov.							
1960							
1959							
1959							
East N. Central Region: Cont.							
Columbus, Ohio	40	47	66	16	18	51	Number of registrants fluctuated widely during period from May to November, reaching a low of 22 in September. Ensuing increase results from layoffs in durable goods manufacturing.
Indianapolis, Ind.	55	41	19	10	25	25	Large part of registrant rise due to layoffs of mechanical engineers by firms engaged in aircraft production. Several cancellations accounted for drop in new openings.
Chicago, Ill.	321	191	194	94	99	81	Increased registrations by mechanical engineers accounted for half of the rise in engineering applications from May to November. Unfilled openings somewhat reduced over past half year.
Detroit, Mich.	440	458	214	6	7	15	Wide variations in number of applications reported during the May to November period. Engineering job seekers recorded at 611 in September, up from 541 in July. The increase was largely due to layoffs at a missile plant. Subsequent decline in registrations does not reflect improvement in employment situation but associated with expiration of 30-day validity period for job registration.

Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:		Comments
	Nov. 1960	May 1960	Nov. 1960	May 1960	

East N. Central Region:
Cont.

Milwaukee, Wis.	159	94	108	194	349	341	Order cancellations because of business slump among transportation equipment and machinery producers contribute to drop in unfilled openings. However, demands, particularly for electrical and mechanical engineers, are still sizable.
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West N. Central Region:
Minneapolis-St. Paul,
Minn.

	167	201	65	86	147	178	Decline in unfilled openings partly due to end of plant expansion at an electronic data processing firm. Drop was greatest for electrical and mechanical engineers, where significant demands were reported a year ago. Applications of engineers, which had dropped from May to September, increased in November, mainly in the industrial and mechanical classifications. Applications have more than doubled over the year.
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Kansas City, Mo.	51	42	18	10	0	5	Job applications up since May despite rise in unfilled openings; registrations from civil engineers increase while those from electrical engineers drop.
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Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:				Comments
	Nov. 1960		May 1960		Nov. 1960		
	1959	1959	1960	1960	1960	1959	
West N. Central Region:							
Cont.							
St. Louis, Mo.	167	149	53	51	137	140	Layoffs in aircraft and auto-related industries boosted supply of engineers, and by September applications had reached 221. The number has since diminished due to recruiting for jobs outside the area, and relocation of some engineers.
South Atlantic Region:							
Baltimore, Md.	39	59	60	46	109	95	Drop in supply centered in civil and electrical classifications. Unfilled openings also declined, largely because of the withdrawal of a substantial order for electrical engineers.
Washington, D. C.	287	231	115	144	174	146	Layoffs or fear of layoffs at engineering research and development firms are causing engineers to register for jobs.
Atlanta, Ga.	62	93	44	2	7	10	Fewer registrations by industrial and mechanical engineers contribute to decline in supply.
East S. Central Region:							
Louisville, Ky.	14	13	15	6	3	5	Applicant supply relatively unchanged. Demand up but continues to be limited.

Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:			Comments	
	Nov. 1960	May 1960	Nov. 1959	Nov. 1960	May 1960		Nov. 1959
<u>West S. Central Region:</u>							
New Orleans, La.	43	47	52	4	3	5 Demand remains limited; slight decrease reported in number of job applicants.	
Dallas, Texas	95	154	73	13	20	122 Reduction in registrations is attributed primarily to considerable recruitment activity by employers located outside this area. Local demand down because of aircraft and other business uncertainty.	
Houston, Texas	134	109	87	11	20	32 Considerable variation in supply reported during 6 months ending in November. Following curtailments in the oil industry, registrations climbed in July to 166. Overall total has since dropped but is well above the May level. Area reports indicate layoffs have been occurring in the higher-salaried brackets among employees of long service.	
<u>Mountain Region:</u>							
Denver, Colorado	131	106	66	120	363	291 Marked reduction in demand for engineers noted among aircraft parts companies. Unfilled openings dropped by 243 from May to November. However, significant needs, particularly for electrical engineers, persist. Supply of applicants has fluctuated over period and totaled 237 in September. Decrease since this period due in part to applicants leaving the labor market to return to school. Another factor has been increased activity by out-of-State recruiters.	

Trends for Engineers--Selected Area Indicators
30 Major Labor Market Areas, November 1960

Region and Area	Active Applications		Unfilled Openings at end of:			Comments
	Nov. 1960	May 1960	Nov. 1960	May 1960	Nov. 1959	
Pacific Region: Seattle, Wash.	78	46	71	1,327	658 1,025	Unfilled openings, particularly for civil, mechanical, and aeronautical engineers, have risen sharply following Boeing's reassessment of its manpower needs.
Portland, Oreg.	83	80	54	10	12 13	Little overall change in demand-supply situation. Some rise in registrations by mechanical engineers reported but decrease noted in civil and electrical categories.
Los Angeles-Long Beach; Calif.	1,207	1,602	603	436	346 688	Rising defense expenditures have improved job market for engineers, with current recruitment concentrated in electrical and mechanical specialties. Part of the decline in supply is also attributable to labor force withdrawals of summer registrants. Despite the drop in applications between May and November, the number was double that of a year earlier. Largest component of engineering supply consists of mechanical engineers, who comprise 40 percent of total.
San Francisco-Oakland, Calif.	301	267	188	44	71 49	Applications in November were above May level but below those of September when 371 persons were registered. Decline since early fall has been aided by upsurge of small defense contracts. Unfilled openings concentrated in electrical and mechanical fields.

CHEMISTS

The labor demand-supply situation for chemists showed some improvement between May and November as job applications in the 30 major reporting areas decreased from 775 to 704. Hiring in the New York, Los Angeles-Long Beach, San Francisco-Oakland, Milwaukee and other areas aided the decline. To some extent, failure of applicants to renew job registrations also contributed to this reduction. Unfilled job openings, totaling 209 in November, have experienced little net change from the May level.

Area reports indicating available employment opportunities note, however, that graduate work is frequently required as well as experience in specialized fields. The San Francisco-Oakland area, for example, indicates that "chemists with advanced degrees are still in great demand but are seldom available." In addition, present openings frequently require specialized experience. In Milwaukee, food chemists are reportedly in the greatest demand, particularly in cereal, malt, beer and candy plants. The Minneapolis-St. Paul area also notes that clearance openings for chemists require advanced degrees in certain specialties.

The American Chemical Society's annual survey of starting salaries paid to recent graduates similarly discloses that the present job market appears more favorable. The report notes that "an extremely high proportion of this year's graduating class was able to find employment. Only 0.25 percent of the respondents indicated that they had been unable to secure positions." With the improved job market, higher salaries were evident. The starting salaries paid to recent graduates in chemistry rose by 8 percent during the past academic year, the largest proportionate gain in several years.

OTHER NATURAL SCIENTISTS

The manpower supply-demand situation for natural scientists other than chemists improved between May and November. The number of job applicants in physics, mathematics and related specialties declined by over 100 (13 percent) to a total of about 700 in this period. At the same time, this was the only occupational category in which all indicators of demand--new orders received, clearance openings, and openings unfilled at the end of the month--rose from May to November. The more favorable labor market situation was, in good measure, attributable to rising defense expenditures in the aerospace field. In the Los Angeles-Long Beach area, where the drop in the number of applications from natural scientists approximated half of the net decline, defense awards helped improve the job market appreciably. Many of the new openings required an advanced degree with extensive work experience in specialized fields.

DRAFTSMEN

The business downturn during the past half year contributed to reduced needs for draftsmen in most of the 30 reporting industry centers. Local office job openings in these areas declined by 200 to a total of about 540 in November, the largest relative as well as absolute decrease in manpower requirements noted in any of the selected occupational groups.

Despite the increased supply of applicants reported in about two-thirds of the areas, total job registrations, approximating 5,600 in November, have not risen since May. This development was due primarily to the failure of many job seekers in Detroit to keep their applications active; as a result, 500 fewer applications from draftsmen were reported in this area in November.

Area reports revealing the numerical adequacy of job seekers in this occupation, nevertheless, continue to note a mismatching of labor supply and demand for draftsmen in various localities. For example, Los Angeles-Long Beach, with an increased number of unfilled openings because of defense contracts, indicated that a major aircraft company was unable to recruit qualified draftsmen with experience in electronic detailing work and was planning to initiate a training program in this speciality. In the San Francisco-Oakland area, demands were reported for "electronics draftsmen, tool designers and occasionally, other draftsmen with design experience" along with an oversupply of marine and architectural draftsmen and junior draftsmen in all specialties.

LABORATORY TECHNICIANS AND ASSISTANTS

The number of laboratory technicians and assistants seeking jobs through public employment offices in the 30 major reporting areas has risen significantly in the past half year. The increased availability of school graduates helped boost the supply of applicants to a total of 2,945 in November, as compared with less than 2,400 in May. Local office job openings dropped from about 450 to 375 in the same period.

The rise in registrations was widespread with 22 of the 30 areas reporting more laboratory technicians seeking jobs in November than in May. Sizable increases of 50 to 99 applications were noted in the Buffalo, Philadelphia, Pittsburgh, Cleveland, Los Angeles-Long Beach, and San Francisco-Oakland areas. In those areas where declines occurred, the drop was nominal.

Job applicants in this field were often handicapped by a lack of experience and higher education. Reflecting recruitment difficulties in this occupational group, the report from St. Louis noted that "there were 81 applications for laboratory technicians on file in November but only 3 had college degrees. Many are high school graduates with limited experience. Openings...require much higher qualifications."

Shortages of registered medical technicians continue to be pronounced. Efforts are being made to alleviate this situation by training more women for work in this occupation (see item in Trend Indicators). In this connection, the San Francisco-Oakland area report notes that there has been "a gradual change in employer requests so that women are now often preferred for laboratory jobs. Because college training is required for most of these jobs despite the fact that pay is mediocre and opportunities for advancement are quite limited, men are not as willing either to accept or to remain on these jobs as long as the average woman."

DIGEST

of related information

Engineering and Scientific Employment in Industry Continues to Mount

Employment of engineers and scientists rose almost 7 percent in the year ending January 1960, according to preliminary estimates from a survey conducted for the National Science Foundation by the Bureau of Labor Statistics. This compares to about a 5 percent rise in the previous year.

These data, based on returns from more than 10,000 cooperating companies, indicated that industrial firms had a net gain of about 40,000 engineers between January 1959 and January 1960. The rise of 6.6 percent represented a much greater growth than during 1958. Employment of scientists increased by more than 10,000 in the same period, a rise of about 7 percent.

Over-the-year employment changes, by occupational groups, are shown in the following table:

Employment of Engineers and Scientists in Industry, by Occupational Group, January 1960

(Preliminary Data)

Occupational Group	January 1960		Percent Change 1959-1960
	Number	Percent	
Total engineers and scientists	815,500	100.0	+6.7
Engineers	656,300	80.5	+6.6
Scientists	159,200	19.5	+7.1
Chemists	76,900	9.4	+7.6
Other physical scientists	57,100	7.0	+9.0
Life scientists	18,800	2.3	+3.9
Other scientists	6,400	.8	-3.0

Industry Salaries for Engineers,
Scientists, and Technicians

The Bureau of Labor Statistics has recently published "the results of the first in a series of annual nationwide surveys of compensation for selected professional, administrative, technical, and clerical occupations in private industry." The study was designed to provide more information than has hitherto been available on pay in private industry for use in appraising the compensation of salaried employees in the Federal civil service. For the most part, the data, including earnings of engineers, scientists, and draftsmen, reflect salaries in effect during the period January-June 1960.

Tables and charts are provided presenting "nationwide estimates of pay levels for 77 occupational work level job categories surveyed in the following industries: Manufacturing, transportation, communication, electric, gas, and sanitary services; wholesale and retail trade; finance, insurance and real estate; engineering and architectural services; and research, development, and testing laboratories. The data relate to establishments employing 100 or more workers located in metropolitan areas."

Six levels of chemists and engineers, and seven levels of mathematicians were surveyed, each starting with a trainee level of professional work typically requiring a college degree or the equivalent in education and experience combined. For engineers, the largest group studied, weekly salaries ranged from \$122 for engineers I to \$272 for engineers VI. For chemists, corresponding salaries ranged from \$106 for chemists I to \$263 for chemists VI. Pay levels for mathematicians were below those for engineers at the lowest levels and about the same at the higher levels.

In the drafting field, four levels of work were studied. Weekly salaries for these levels averaged \$72.50 for a relatively small group of tracers, \$90 for junior draftsmen, \$120 for senior (fully experienced) draftsmen, and \$146 for lead draftsmen, who may perform drafting work but also plan and direct the work of others.

Employment, hours and earnings data for selected occupations are included in the following tabulation:

Employment, Average Weekly Hours, and Average Weekly
Salaries for Engineers, Scientists, and Draftsmen
in Surveyed Establishments, Winter 1959-60

Occupation and class	Number of Employees	Average Weekly (standard) <u>1/</u>	
		Hours	Salaries (mean)
Engineers I	19,276	40.0	\$122
Engineers II	43,145	40.0	139
Engineers III	75,956	40.0	161
Engineers IV	65,535	40.0	189
Engineers V	32,132	40.0	223
Engineers VI	12,705	39.5	272
Chemists I	3,902	40.0	106
Chemists II	6,121	40.0	124
Chemists III	8,454	39.5	149
Chemists IV	5,657	40.0	182
Chemists V	3,402	39.5	211
Chemists VI	1,481	39.5	263
Mathematicians I	389	40.0	111
Mathematicians II	679	40.0	130
Mathematicians III	714	40.0	153
Mathematicians IV	510	39.5	175
Mathematicians V	351	39.5	226
Mathematicians VI	174	39.0	272
Mathematicians VII	85	39.0	289
Draftsmen, junior	27,937	40.0	90
Draftsmen, senior	50,247	40.0	120
Draftsmen, leader	8,844	40.0	146
Tracers	3,668	39.5	72.50

1/ Standard hours reflect the workweek for which employees receive their regular straight-time salaries and the standard salaries correspond to these weekly hours.

National Survey of Professional,
Administrative, Technical, and
Clerical Pay--Winter 1959-60

Bureau of Labor Statistics,
U. S. Dept. of Labor
Bulletin No. 1286

University of California Placement
of Engineers and Scientists

The market for recent graduates is evidenced by the University of California's placement record for engineers and scientists in 1960. Available data indicate that aircraft and missile establishments hired more selectively than in past years and that some electronic firms failed, for the first time in many years, to hire new graduates. About 60 percent of the graduates remained in Northern California, primarily the Bay Area, while 25 percent went with firms in Southern California.

Salaries at which engineering graduates were hired indicate that aircraft and missile firms paid premium wages generally while government generally paid less than the median. The following summary illustrates the fact that space age and electronic firms have been helped considerably in their recruitment by offering the highest wages. It also indicates the relatively low starting salaries in the biological sciences for persons receiving only bachelor's degrees. The median starting salary for biologists in 1960, however, was considerably higher than in 1959, jumping from \$358 per month to \$410.

Median salaries for M.S. degree candidates in the various specialties ranged from \$75 to \$125 per month more than that offered bachelor degree candidates in the same fields. Beginning salaries for Ph.D. candidates were higher still. The median salary for Ph.D. chemical engineers was \$943. Chemists accepting teaching positions started at \$516, but those accepting other positions averaged \$835. Mathematicians and statisticians received a median of \$512 for teaching positions and \$850 for other positions. The median for physicists accepting teaching positions was \$570 compared to \$925 for those accepting nonteaching jobs.

Salaries of bachelor's level graduates from the University of California for various specialties are indicated in the following tabulation:

Salary Survey of 1960 Bachelor's Level Graduates from the
University of California in Selected Specialties

(Salaries are Medians)

Major Field	Graduates		Graduates Hired by:					
	in		Aircraft &		Elec-		Govern-	
	Survey		Missiles		tronics		ment	
	No.	Sal.	No.	Sal.	No.	Sal.	No.	Sal.
Engineering:								
Civil	64	\$517	2	\$508	--	--	27	\$510
Electrical	119	565	36	563	53	\$570	13	500
Industrial	14	500	2	550	--	--	--	--
Mechanical	94	526	26	540	10	545	9	500
Mineral Tech. & Eng. Physics	10	545	3	585	1	555	1	500
Chemical	39	526	7	545	1	585	1	450
Sciences:								
Chemistry & Biochemistry	24	450	1	540	--	--	5	460
Biological	11	410	--	--	--	--	1	415
Geology & Paleontology	2	520	--	--	--	--	1	556
Physics	18	505	3	547	3	475	--	--
Mathematics & Statistics	25	473	3	516	4	502	5	471

Placement Center, University of California, "Annual Report
for September 1, 1959 to August 31, 1960." Data included
in October 1960 San Francisco-Oakland Labor Market Report,
prepared by California Department of Employment

Chemical Survey--Starting
Salaries Up 7 Percent

Starting salaries in the chemical profession advanced by an average of 7 percent during the past academic year, according to the annual survey of the American Chemical Society. Recent graduates in chemistry reported starting salaries which averaged 8 percent higher and chemical engineering graduates reported increases of 6 percent. The survey covered graduates of 253 of the 286 departments of chemistry and 278 of the 298 departments of chemical engineering approved by the Committee on Professional Training.

Other survey findings indicated the following:

1. Women chemists with a B.S. degree reported the largest single increase, from an average of \$375 a month in 1959 to \$425 in 1960--an increase of 13.3 percent. Male graduates in chemistry increased their previous year's starting salary of \$450 a month by 8.2 percent to \$490 in 1960. Starting salaries for Ph.D. graduates in chemistry rose by 7.1 percent to \$750 a month.
2. Geographic location and type of industrial position had little bearing on the over-all starting salaries offered beginning B.S. chemists and chemical engineers. Increasing numbers of graduates went to work in the South Atlantic, Middle Atlantic and West South Central States. The West Coast States attracted fewer new chemists and chemical engineers.
3. Uncertain economic conditions during the first half of 1960 have not adversely affected salaries for recent graduates. In addition, an extremely high proportion of the June 1960 graduating class was apparently able to find employment. Only 0.25 percent of the respondents indicated that they had been unable to secure positions.

David A. H. Roethel
American Chemical Society
"1960 Starting Salaries Rise 7%"
Chemical and Engineering News
October 31, 1960

Electrical Engineering Graduates Command
Highest Starting Salaries

Electrical engineering graduates still are in greatest demand and draw the highest starting salaries, according to a College Placement Council survey of 1,406 placements of last June's graduates from 61 colleges across the country.

All the higher bracket starting salaries were in engineering or the sciences. Electrical engineering graduates were offered, on the average, \$552 a month, aeronautical engineers \$551, physicists \$546, chemical engineers \$540, and mechanical engineers \$536. The average for the engineering group as a whole was \$543.

Washington Post
January 20, 1961

Professional Recruiting Advice

Engineers and scientists play so important a role in a company's success today that their recruitment deserves top management planning and thinking, according to Arnold R. Deutsch, president, Deutsch and Shea, Inc., manpower consultants. His suggestions on technical recruitment are as follows:

Improve the accuracy of projections of professional manpower needs. This will cut waste in stop-start recruiting, and enable a company to train its own experts in hard-to-find specialties.

Plan long range recruiting programs. Avoid relying on advertising alone to recruit technical people, to the exclusion of less expensive methods.

Improve recruiting procedures. Speeding follow-up procedures and making faster hiring decisions will reduce the cost per hire.

Work with schools and technical societies to improve the quality and supply of technical manpower.

Industrial Relations News
January 7, 1961

Teamwork in Science

Speakers at the annual meeting of the American Association for the Advancement of Science called for teamwork among the various scientific disciplines to meet the Communist challenge to America's scientific lead.

Scientific research today, grown complex and ranging far beyond what was orthodox only a few years ago, is no longer a job for one man or even for several men who are all trained in the same branch of science.

It takes the combined effort of a team of experts from several fields of the physical and social sciences to resolve the more complex problems encountered in research today.

Both by instinct and training, an American scientist is an individualist and doesn't take easily to this sort of team effort. Yet, papers presented at the AAAS meetings noted case after case where only a cooperative effort can solve a problem:

In theoretical physics, the knowledge of the astronomer is needed in helping to determine the basic nature of plasma, the fourth state of matter. And only then can engineers put the information to use in the space effort and the harnessing of fusion energy.

In biology, the physicist must continue to work closely with doctors who are preparing equipment in which men can safely explore space.

In biochemistry, the physicist's latest theories about the atom must be known by those who are searching for new methods to control disease.

In geology, organic chemists are being asked more and more to contribute to the problems in such projects as Mohole, the plan to drill a hole through the earth's crust to determine the consistency of the globe's inner layers.

Need: More Teamwork in Science
Business Week, January 7, 1961

Growth of Industrial Research in Boston Area

The Greater Boston Chamber of Commerce in a report entitled "The Boston Area--America's Top Spot for Industrial Research" noted that the local engineering population has nearly doubled since 1950 and now numbers in excess of 25,000. The distribution of engineers by specialty is as follows:

<u>Type</u>	<u>1950</u>	<u>1960</u>	<u>Percent increase</u>
Aeronautical	120	194	61.7
Chemical	660	1,125	70.5
Civil	3,240	6,904	113.1
Electrical	3,426	5,820	70.0
Industrial	1,006	1,670	66.0
Mechanical	2,743	6,530	138.0
Metallurgical	196	263	34.2
N. E. C.	2,017	3,036	50.1
Total	13,408	25,542	90.5

According to the report, the number of engineering and science graduates at all levels from colleges and universities in the Boston area may climb from almost 3,100 in 1960 to more than 4,100 by 1965. Particulars by field of study and type of degree are shown in the following table.

Distribution of Engineering and Science Graduates from Boston
Area Colleges and Universities in 1960 and Projections for
1965

(including data for selected specialties)

Field	1960		1965	
	Bachelor's level	Post-Graduate level	Bachelor's level	Post- Graduate level
Total	1,954	1,124	2,729	1,405
Engineering	1,171	716	1,311	830
Electrical	403	242	432	250
Mechanical	280	131	301	113
Science	783	408	1,418	575
Physics	242	122	375	143
Mathematics	153	34	326	109

Boston Area Labor Market Report
for December 1960, prepared by
Massachusetts Division of
Employment Security

appendix

Technical Notes

Information in this report is based chiefly on two kinds of data, both prepared in the Office of Program Review and Analysis of the Bureau of Employment Security. Since January 1957, the Bureau has been publishing reports on the number of job openings in a group of selected occupations placed in interarea clearance by public employment offices. The source of information on clearance openings is the Inventory of Job Openings, published every two weeks by each State employment security agency. These inventories list all openings currently in clearance (a process of matching workers in one area with jobs in other areas) by State agencies affiliated with the United States Employment Service.

Supplementary data on the same occupations were requested from the field offices of the 30 largest labor market areas ^{1/} for the first time in May 1958. These area labor market reports provide information on the local demand-supply relationships for engineering, scientific and technical personnel in the area.

The demand-supply relationship in the selected categories is not always fully indicated by the numerical data. Active applications or registrations show the number of individuals in the selected occupations who apply for work at public employment offices. In a like manner, openings received and unfilled at the end of the month are not complete measures of demand since they cover only job orders placed with public employment offices. Despite these limitations, the data provide a useful indication of the demand-supply trend and its nature.

^{1/} The occupations covered and the appropriate code number from the Dictionary of Occupational Titles include: Engineers, metallurgical and metallurgists (0-14), engineers, chemical (0-15), engineers, civil (0-16), engineers, electrical (0-17), engineers, industrial (0-18), engineers, mechanical (0-19), engineers, aeronautical (0-19.03), engineers, mining (0-20), chemists (0-07), natural scientists, n.e.c. (0-35), draftsmen (0-48), and laboratory technicians and assistants (0-50). A list of the 30 areas appears on page 31.

List of 30 Major Labor Market Areas by Regions

New England:

Boston, Massachusetts
Providence, Rhode Island

Middle Atlantic:

Buffalo, New York
New York, New York
Newark, New Jersey
Paterson, New Jersey
Philadelphia, Pennsylvania
Pittsburgh, Pennsylvania

East North Central:

Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
Indianapolis, Indiana
Chicago, Illinois
Detroit, Michigan
Milwaukee, Wisconsin

West North Central:

Minneapolis-St. Paul, Minnesota
Kansas City, Missouri
St. Louis, Missouri

South Atlantic:

Baltimore, Maryland
Washington, D. C.
Atlanta, Georgia

East South Central:

Louisville, Kentucky

West South Central:

New Orleans, Louisiana
Dallas, Texas
Houston, Texas

Mountain:

Denver, Colorado

Pacific:

Seattle, Washington
Portland, Oregon
Los Angeles-Long Beach, California
San Francisco-Oakland, California

tables

Table I. Trend in Job Openings Placed in Interarea Clearance by Public Employment Offices, January 1956, and Bimonthly, January 1957-January 1961

Month and Year	All Occupations	Professional & Managerial	Selected Occupations 1/				
			Total	Engineers	Scientific	Draftsmen	Technicians
Jan. 1956	27,887	12,845	6,803	4,792	435	1,361	215
Jan. 1957	35,629	14,498	8,993	6,349	389	1,988	267
March	34,390	15,952	9,300	6,428	732	1,851	289
May	31,452	14,007	8,404	5,976	576	1,591	261
July	29,144	11,879	7,407	5,437	590	1,174	206
Sept.	23,208	8,986	5,480	3,946	569	791	174
Nov.	13,859	5,388	2,879	1,993	294	384	208
Jan. 1958	14,665	7,726	2,582	1,817	245	315	205
March	14,451	8,244	3,496	2,717	398	204	177
May	15,552	9,439	3,505	2,764	330	244	167
July	14,420	7,514	3,540	2,921	233	212	174
Sept.	15,363	8,732	5,303	4,447	431	255	170
Nov.	17,661	9,308	4,789	3,906	475	243	165
Jan. 1959	16,042	10,530	5,426	4,386	489	377	174
March	17,960	10,820	5,473	4,278	576	391	228
May	23,232	12,828	5,635	4,387	602	402	244
July	20,559	10,112	5,315	4,128	486	495	206
Sept.	21,414	10,140	6,320	5,096	500	548	176
Nov.	21,101	11,740	6,585	5,193	600	616	176
Jan. 1960	19,735	11,834	5,817	4,389	648	605	175
March	21,286	12,611	5,167	3,927	587	442	211
May	19,839	11,217	4,710	3,589	550	364	207
July	17,480	9,589	4,401	3,489	483	272	157
Sept.	15,380	8,137	4,453	3,591	492	201	169
Nov.	15,445	8,310	4,605	3,697	471	248	189
Jan. 1961	17,954	12,033	4,799	3,835	516	296	152

Source: Department of Labor, Bureau of Employment Security, Office of Program Review and Analysis

1/ Data will differ from that previously published because of the exclusion of technical writers from the selected occupations.

Table II. Number of Active Applications for Selected Occupations Registered by Public Employment Offices in 30 Major Labor Market Areas, November and May 1960, and November 1959

Labor Market Area	Chemists			Other Natural Scientists			Draftsmen			Laboratory Technicians		
	Nov. 1960		Nov. 1959	Nov. 1960		Nov. 1959	Nov. 1960		Nov. 1959	Nov. 1960		Nov. 1959
	May 1960	Nov. 1960	Nov. 1959	May 1960	Nov. 1960	Nov. 1959	May 1960	Nov. 1960	Nov. 1959	May 1960	Nov. 1960	Nov. 1959
Total.....	704	775	695	709	818	568	5,601	5,713	3,309	2,945	2,368	2,143
Boston.....	24	25	26	29	32	20	219	315	146	121	127	79
Providence.....	5	2	6	5	4	4	28	38	30	32	27	26
Buffalo.....	34	28	17	20	15	15	86	55	66	123	64	66
New York.....	119	161	182	143	151	119	623	673	650	329	286	354
Newark.....	30	40	46	17	20	24	163	84	54	104	84	98
Paterson.....	6	17	14	5	8	11	68	46	52	44	42	59
Philadelphia.....	45	28	31	23	19	19	391	260	302	206	151	169
Pittsburgh.....	32	24	21	13	10	11	223	176	219	245	147	142
Cincinnati.....	7	4	4	4	6	1	63	68	43	36	28	35
Cleveland.....	14	16	11	6	2	9	228	108	83	133	80	37
Columbus.....	8	3	4	4	4	2	50	34	36	33	12	15
Indianapolis.....	2	4	2	3	3	2	53	43	16	28	39	17
Chicago.....	51	33	49	6	15	13	255	110	137	137	111	118
Detroit.....	12	12	18	17	12	5	631	1,139	128	74	75	52
Milwaukee.....	13	24	15	24	32	17	45	23	16	28	11	12
Minneapolis-St. Paul..	17	25	18	28	43	14	152	109	57	48	49	35
Kansas City.....	6	6	5	3	2	1	37	28	17	18	14	11
St. Louis.....	23	18	10	18	16	12	167	120	45	81	56	54
Baltimore.....	5	8	12	6	2	5	58	77	48	32	37	31
Washington.....	27	32	26	57	68	61	171	163	66	76	90	36
Atlanta.....	1	15	7	8	10	4	59	43	51	31	29	20
Louisville.....	6	8	5	2	2	4	20	25	20	22	16	27
New Orleans.....	15	8	8	15	25	14	58	75	49	42	31	19
Dallas.....	17	9	6	18	30	20	55	86	48	16	22	28
Houston.....	28	19	12	42	42	23	170	83	81	86	60	42
Denver.....	8	12	5	33	34	25	44	66	37	47	47	60
Seattle.....	13	10	7	9	13	5	58	46	70	33	28	23
Portland.....	5	6	16	8	5	13	74	45	34	31	32	37
Los Angeles-Long Beach	88	122	81	93	146	67	1,041	1,288	520	475	395	304
San Francisco-Oakland..	43	56	31	50	47	28	311	287	188	234	178	137

Table III. Number of Unfilled Openings for Selected Occupations
in 30 Major Labor Market Areas, End of Month,
November and May 1960, and November 1959

Labor Market Area	Other Natural						Draftsmen			Laboratory Technicians		
	Chemists			Scientists			Nov. 1960			Nov. 1960		
	Nov. 1960	May 1960	Nov. 1959	Nov. 1960	May 1960	Nov. 1959	Nov. 1960	May 1960	Nov. 1959	Nov. 1960	May 1960	Nov. 1959
Total.....	209	212	214	365	310	368	542	741	872	375	452	407
Boston.....	3	2	7	3	5	9	27	38	114	47	60	56
Providence.....	3	1	2	0	0	0	4	5	4	2	2	2
Buffalo.....	6	8	9	9	5	16	11	16	6	22	19	13
New York.....	42	32	26	12	21	10	90	107	85	54	58	66
Newark.....	7	11	32	4	5	3	14	19	42	10	18	20
Paterson.....	1	2	3	1	2	7	7	15	20	9	8	7
Philadelphia.....	6	4	0	0	1	0	6	23	10	2	7	7
Pittsburgh.....	9	12	13	4	2	4	9	22	20	3	7	2
Cincinnati.....	6	9	9	2	3	0	8	2	9	5	10	9
Cleveland.....	8	5	6	8	0	0	6	7	27	6	3	10
Columbus.....	1	1	3	2	3	1	11	3	17	8	6	3
Indianapolis.....	1	2	2	1	0	2	2	3	7	1	3	4
Chicago.....	13	20	17	5	2	0	25	49	44	20	24	16
Detroit.....	0	0	0	0	0	0	3	6	13	0	1	5
Milwaukee.....	9	14	9	103	107	104	78	86	122	18	12	18
Minneapolis-St. Paul..	17	21	13	7	11	19	32	70	48	31	20	13
Kansas City.....	1	0	1	1	0	0	3	3	2	1	1	3
St. Louis.....	11	16	9	2	12	6	13	20	20	8	7	11
Baltimore.....	2	2	1	1	0	1	1	4	22	2	6	13
Washington.....	21	12	7	37	58	46	6	34	50	35	33	34
Atlanta.....	0	1	1	0	0	0	1	2	2	3	2	1
Louisville.....	0	1	3	0	0	0	6	7	2	0	4	0
New Orleans.....	0	0	0	1	0	0	0	0	0	0	0	0
Dallas.....	1	1	1	4	4	2	5	6	10	3	6	4
Houston.....	0	5	1	0	1	1	10	11	1	4	11	0
Denver.....	0	0	0	2	3	17	26	27	21	35	41	23
Seattle.....	0	0	2	88	34	50	14	59	8	0	0	0
Portland.....	2	0	0	0	1	1	3	6	9	1	4	2
Los Angeles-Long Beach	31	24	32	67	27	63	102	64	107	26	49	41
San Francisco-Oakland..	8	6	5	1	3	6	19	27	30	19	30	24

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